



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/920,133	08/01/2001	Kazunobu Kubota	7217/65186	5686

7590 10/06/2005
COOPER & DUNHAM LLP
1185 Avenue of the Americas
New York, NY 10036

EXAMINER

GRAHAM, ANDREW R

ART UNIT	PAPER NUMBER
----------	--------------

2644

DATE MAILED: 10/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/920,133

Applicant(s)

KUBOTA, KAZUNOBU

Examiner

Andrew Graham

Art Unit

2644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment/Argument

1. This office action addresses the remarks and amended form of the claims as submitted in the applicant's response mailed May 6, 2004. As this office action involves new grounds of rejection, the applicant's remarks regarding the previously applied grounds of rejection are rendered moot.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: SL1 SR1 from Figure 6. It appears that the final paragraph of page 17 addresses this particular part of Figure 6, though the reference characters of SL1 and SR1 are not used. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next

Art Unit: 2644

Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1-5, 7, 9-12, and 14-18 are rejected under 35 U.S.C. 102(b) as being anticipated by McGrath.

McGrath discloses a system for processing audio signal sources prior to the application of virtual positioning filtering.

Regarding Claim 1, McGrath teaches:

A method of processing an audio signal (Figure 1) comprising the steps of:

receiving plurality of M sound source signals (9,9a)(col. 5, line 66 - col. 6, line 13),

each of said sound source signals having attributes including at least one of position information, movement information, and localization position information (input sound is three dimensional, col. 4, lines 57-59; sources and their signals have associated direction of arrival, col. 5, lines 47-52; each of signals of sources have associated predetermined positions, as are implemented by 11, col. 6, lines 3-9 and 39-42; signals may also have associated relative movement, as evidenced by Doppler effect components, col. 6, lines 17-27);

arranging said M sound source signals in groups (B-format X,Y,Z,W channels or components) based on the attributes of the M sound source

Art Unit: 2644

signals so as to form grouped sound source signals (respective outputs of 11 from each input audio signal 9,9a are applied to each adder 12, wherein each adder 12 represents a particular B-format channel, Figures 2-3; the amount of each signal involved or 'grouped' with each B-format channel is based on gain, which is at least set according to particular position of source, col. 6, lines 29-42; amount of signals involved or 'grouped' with each B-format channel also be adjusted based on an amplitude and direction of a reflection of signal sources, by the setting of delay, frequency response and gain of secondary taps, col. 6, lines 43-55);

storing the grouped sound source signals (channel information may be prerecorded, col. 5, lines 31-35);

providing control signals (yaw, pitch, roll data) having one of position information and movement information (data directly indicates position of headphone and indirectly movement information by current data relative to previous data; data enables position of head to be calculated relative to sound field (room) and XYZ locations of sound sources, col. 7, line 18- col. 8, line 15);

reading out the stored grouped sound source signals (application of WXYZ channels or components from prerecorded source noted above to rotation means 6, Figure 1); and

performing virtual localization processing on the read-out grouped sound source signals (from prerecorded 2) based on the control signals so as to produce left and right stereo signals (functioning

Art Unit: 2644

performed by rotation of means 6 and conversion of means 8, col. 7, line 53 - col. 8, line 54).

Regarding **Claim 2**, McGrath teaches:

wherein said step of performing virtual localization processing is a virtual sound image localization for obtaining the left and right stereo signals supplied to a pair of acoustic transducers to localize sound image an arbitrary position around a listener (sound sources are located at desired position, corresponding signals are output over stereo headphones, col. 5, lines 55-64).

Regarding **Claim 3**, McGrath teaches:

wherein said at least one of said attributes said sound source signals is changed by a change instruction ('instruction' of forwarding of current, measured roll, pitch, or yaw data, at least wherein the resulting, forwarded data comprises current data different than previously measured data, col. 5, lines 38-55; measuring of data at least changes direction of arrival characteristic associated with sound source, col. 5, lines 47-61).

Regarding **Claim 4**, McGrath teaches:

wherein said change instruction is supplied by a user's operation (forwarding of measured data, including measured data that differs, is based on user's handling of headphone or helmet, col. 5, lines 47-61).

Regarding **Claim 5**, McGrath teaches:

wherein said change instruction is obtained by detecting a movement of a listener's head (tracking of head produces yaw, pitch, roll data, including data that differs, col. 7, lines 18-26).

Art Unit: 2644

Regarding **Claim 7**, McGrath discloses:

wherein each number of groups of said grouped sound source signals is two or greater (at least three channels, col. 5, lines 24-29),

at least one of said grouped sound source signals is based on the attribute of localization information (B-format signals are related to the direction of arrival from the sound source, col. 5, lines 47-52).

Regarding **Claim 9**, please refer above to the rejection of the similar limitations of Claim 1, noting that the values of the roll, pitch, and yaw data are utilized in the virtual positioning of the sources (col. 7, lines 22-65), which equates to "based on the control information".

Regarding **Claims 10-12**, please refer to the above rejection and grounds of rejection applied to the similar limitations of Claims 3-5, respectively.

Regarding **Claim 14**, please refer to the above rejection and grounds of rejection applied to the similar limitations of Claim 7.

Regarding **Claims 15 and 17**, please refer to the components in the system of McGrath involved with the implementation of the functions cited above as applied in the rejection of the similar limitations of Claim 1, including particularly those noted in column 5, lines 5, lines 40-46 and col. 10, lines 4-13. The suggested 'prerecorded' nature of the B-format signals for the system of McGrath, as cited in an above rejection, inherently teaches the involvement of some form of

Art Unit: 2644

memory or memory means for storing the prerecorded digital B-format signals.

Regarding Claims 16 and 18, please refer to the above rejection and grounds of rejection applied to the similar limitations of Claim 2.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 6, 8 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over McGrath as applied above, and in further view of Wyse et al (WO 99/16049 A1).

As detailed above McGrath teaches a system for processing audio signals in order to synthesize a virtual audio sound field, wherein the sound field is reproduced through a binaural headphone output.

McGrath does not clearly specify:

- further comprising the step of supplying random fluctuations to at least one sound source signal of said M sound source signals and/or said grouped sound source signals.

Art Unit: 2644

Wyse teaches a system for modeling and producing audio sound effects for a video game sound field.

Regarding Claim 6, Wyse particularly teaches:

- the step of supplying random fluctuations to at least one sound source signal of said M sound source signals and/or said grouped sound source signals (added fluctuations, page 27, lines 7-25, in view of signal processing performed by component 11 for each input signal or to the component signal by means 6 or 8 in system of McGrath)

To one of ordinary skill in the art at the time the invention was made, it would have been obvious to incorporate random fluctuations as part of the signal processing of each input audio channel or a B-format channel in the system of McGrath, as is taught for the system of Wyse. The motivation behind such a modification would have been that such fluctuations would have avoided exact repetition of the sound source and achieved a natural effect for the sound.

Regarding Claim 8, McGrath in view of Wyse teaches:

steps of changing a video signal in response to changes of reproducing localization positions of said M sound source signals or said grouped sound source signals (synchronization of sound with visible items in video, page 30, lines 10-19 of Wyse, in view of use of system of McGrath with video game, col. 10, lines 22-27) and

outputting said video signals (output of video is inherent in view of elements, such as feet in Wyse, being visible, page 30, line 14).

Art Unit: 2644

Regarding **Claim 13**, please refer to the above rejection and grounds of rejection applied to the similar limitations of Claim 6.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Graham whose telephone number is 571-272-7517. The examiner can normally be reached on Monday-Friday, 8:30 AM to 5:00 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 571-272-7848.


Art Unit: 2644

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



ag
October 3, 2005


VIVIAN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600